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Ants in Finland

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An excursion was made in May, 1961 with the particular object of implementing information on the distribution of *Formica* spp. in Finland. Results of a similar journey in Norway and Sweden have already appeared (Collingwood, 1959) but it was of great interest to visit Finland where little has been published in recent years. Short stops of a few hours only were made but most of the local northern species including *Formica gagatoides, F. transkauasica, F. uralensis, F. suecica* and *F. forsslundi* were seen in their appropriate habitats.

Notes on the species:—

MYRMICA

M. rubra L. was only seen on the island of Ruissalo near Turku. Two of the numerous colonies seen were found nesting in *Lasius flavus* mounds as is commonly found with *M. scabrinodis* in Britain. *M. ruginodis* Nyl. was present at every place visited and is clearly the most widely distributed ant in Scandinavia as Holgersen (1944) found in Norway. The microgynous form (Brian and Brian, 1949) was seen at Savonlinna and Pieksamaki in central S. E. Finland while the more usual macrogynous form was common everywhere. In 1958 I took '*microgyna*' in both Norway (Svolvaer) and Sweden (Stokholm), but I have not seen it in collections from continental Europe. *M. sulcinodis* Nyl. was present at Rovaniemi and is doubtless as common in the more open country of N. Finland as it is in N. Scandinavia and parts of Scotland. *M. lobicornis* Nyl. was taken at Kouvola in S. Finland and Laurila in the north.

M. schencki Em. occurred both at Ruissalo and Savonlinna. This is our rarest *Myrmica* in Britain but I have the impression that in S. Scandinavia generally it is as common as *M. sabuleti* Mein. which I also found at Savonlinna. Forsslund (1957) gives the same range for the two species in Sweden, whereas in Britain *sabuleti* is much more abundant and occurs right up to N. Scotland. *M. scabrinodis* Nyl. was common as elsewhere in N. Europe. I did not find *M. rugulosa* Nyl. in Finland where it has been recorded but had the pleasure of seeing it again near Åhus in S. Sweden.

LEPTOTHORAX

L. acervorum Fab. was found everywhere and seems to be as common in Scandinavia as *M. ruginodis*. The inquiline species *Harpagoxenus sublaevis* Nyl. occurred with *L. acervorum* at Pieksamaki in a pine stump. This interesting ant was originally discovered in Finland but it is also quite common in Norway and Sweden although decidedly local in the rest of Europe. The only other *Leptothorax* seen was *L. tuberum* Fab. nesting in a rocky bank at Savonlinna. Another inquiline, *Formicoxenus nitidulus* Nyl., was found in a nest of *Formica lugubris* Zett. at Laurila and also in some numbers at Haparanda in N. Sweden with *F. aquilonia* Yarrow. *Tetramorium caespitum* L. was only found at Savonlinna which is well inland although its distribution in Scandinavia generally, as in Britain, tends to be coastal.

CAMPONOTUS

C. ligniperdus L. was found abundantly under stones at Savonlinna where alate queens and males were already present in the nests on 23rd May. *C. herculeanus* L. was general at all sites up to Laurila, typically nesting in spruce stumps. Hölldobler (1944) records it at Lat. 66 in N. E. Karelia; Forsslund (1957) lists it for all the provinces of Sweden while in Norway (Holgersen, 1942) it occurs as far north as lat. 70°.

LASIUS

L. niger L. was generally abundant and was taken as far north as lat. 65° 50′ at Laurila. This is the most northerly record to date for this common and wide-ranging holarctic species. I also saw it at Oulu and Forsslund has taken it as far north as Lulea in Sweden. *L. flavus* F. was general in S. Finland. *L. mixtus* Nyl. is regarded as a synonym of *L. umbratus* Nyl. on good evidence by Wilson (1955), but this has not been accepted by some European authors. Dr. Forsslund told me that all Swedish examples are quite distinct with no overlapping with *umbratus*. Nylander's types at the Helsinki Natural History Museum as well as later captures in Finland belong clearly to one or the other. However, apparent intermediates do in fact occur and I have seen such from Denmark in the Zoology Museum, Copenhagen by courtesy of Mgr. Chas. Bisgaard. A typical *L. mixtus* queen was found wandering on a bank at Savonlinna and typical workers have been taken at Hauerseter in Norway on a former occasion. A few *L. umbratus* workers were found under a stone at Ruissalo. Another similar species *L. rabaudi* Bond. is quite common in parts of Denmark according to Mgr. Bisgaard and also in S. Sweden where I found it in some abundance on calcareous sandy heathland near Ahus in Skäne. Here most of the nests were under stones often with irregular earth mounds built up to one side. This species has not yet been found in Norway or Finland. *L. fuliginosus* Latr. does not appear to be common in Finland where only one series is represented in the Helsinki Museum. Åhus in S. Sweden is the only locality where I have seen it in Scandinavia.

FORMICA FUSCA Group.

Formica fusca L. was seen at Ruissalo, Salo, Turku, Helsinki, Kouvola, and Savonlinna in the south. *F. lemani* Bond. was only recognised at Oulu, Laurila and Rovaniemi in the north but probably occurs considerably further south as well. *F. rufibarbis* Fab. was present in numbers at Savonlinna but is quite local in S. Finland. *F. cinerea* Mayr. was recorded for Finland many years ago but I do not know of any recent published information on its distribution there. Dr. Forsslund informs me that it has been taken in several places in the south and east. It is locally common in a few places round the coast of Denmark and in S. Sweden where it inhabits dry sandy areas. It is not known in Belgium, the Netherlands or N. Germany and there is a big gap between its Scandinavian localities and its main areas of distribution in Central Europe. I did not see this species in Finland but had the pleasure of observing it in numbers around Åhus in Sweden. One nest under a stone had a single queen, contrasting with its usual multicolonial habit with many queens.

F. gagatoides Ruzs. was only seen once at Rovaniemi. This is the most northern species of this group and Holgersen (1942) records it right up to the North Cape at lat. 70° 40′. South of the Arctic Circle it is restricted in Scandinavia to the mountains of Norway and Sweden where it has the same habitat as, and presumably competes with, *F. lemani*. The bog inhabiting species *F. transkaucasica* Nas. (*picea* Nyl.) was seen in numbers at Pieksamaki in Central Finland as well as at Rovaniemi in the north where there are many miles of bog forest. It is also widely distributed in Sweden and Denmark but it is not yet recorded from Norway. It is frequent in N. Europe in suitable localities and further south it is found in mountain areas from the Caucasus to the Pyrenees where I found it in wet upland meadow in 1959 near Font-Rameau in the Pyrénées-Orientales.. Records of this species from Central Asia and the Himalayas seem to me suspicious and probably refer to the superficially similar *Proformica nasuta* and its allies. For example, series in the Stockholm Natural History Museum from S. Mongolia and S. Korea collected during one of Sven Hedin's expeditions are labelled '*F. picea*' but are clearly a *Proformica* species.

FORMICA EXSECTA Group.

Formica exsecta Nyl. itself was very abundant in Finland from Kouvola in the south, where I saw it in natural combat with *F. aquilonia*, to Rovaniemi. At Kouvola, a queen was taken among the combatants and had a more deeply excised scale and was as well considerably more hairy than *F. exsecta* from Britain. Worker pilosity however, seems to intergrade more or less from north to south among the numerous series I have from Scandinavia. Series of hairy workers from Finland led Betrem (1954) to propose a separate species '*kontuniemi*' but a clear distinction between the various worker samples in my collection does not seem to be possible. A study of series of males and queens would be necessary before a decision was made on the validity of Betrem's suggestion. Nests of *F. exsecta* were found in the open, in woodland, in bogs and even in pasture and the habitats of this common ant ranged over those typical for each of the following more local species.

F. pressilabris Nyl. is not a common species anywhere in Europe. Holgersen (1944), only knew of one locality in S. Norway but Forsslund (1957), indicates a wide distribution in S. Sweden. A group of 7 nests along a sandy track were seen at Savonlinna in S. E. Finland. These nests were covered with fine grassy litter but not heaped up in a definite mound.

F. suecica Adlerz is an interesting Scandinavian species only known from Norway, Sweden, Finland and one locality in Estonia. Holgersen (1943) and Forsslund (1947) have described its nesting habits in Norway and Sweden respectively. Typically it nests in tree stumps without much movable leaf litter but sometimes irregularly shaped litter mound nests are built. Both stump and mound nests were seen at Oulu and Rovaniemi respectively. This ant much resembles *F. exsecta* in general appearance and size but is slower moving and less aggressive. It is distinguished by the characteristic rounded head lobes, scale shape and hairless eyes.

F. forsslundi Lohmander is one of the most recent additions to the European fauna. It was described in 1946 from one locality in Sweden since when Forsslund has found it in several places from Småland in the south to Härjedalen in the centre and Dr. R. Krogerus has taken it in Central Finland. More recently Dr. H. Kutter found it in 1957 in Switzerland. I had the pleasure of seeing this species at Rovaniemi where I found three small nests in the bog among dwarf birch and willow. This locality is about four degrees latitude north of its known range in Sweden. This small shining species is found exclusively in forest bog in much the same sort of habitat as *F. transkaucasica*.

FORMICA SANGUINEA Latr.

F. sanguinea is abundant throughout Scandinavia. Holgersen recorded it only as far north as Dovre in Norway. Forsslund, however, recorded it from Jokkmok and I found it in 1958 at Gällivare both within the Arctic Circle. In Finland it occurred at Rovaniemi and Oulu as well as several places further south. In these Northern localities, including also Haparanda and Lulea, the auxiliary species found with it was *F. lemani*. There is no definite record of *F. gagatoides* as slave species but Hölldobler found *F. sanguinea* in N. E. Karelia at lat. 66° in association with *F. 'fusca-picea'* which almost certainly refers to *F. gagatoides*. Both Adlerz (1914) and Skwarra (1929) found mixed nests of *F. sanguinea* and *F. transkaucasica*. I saw such a nest in a bank at the edge of a bog at Pieksamaki. This was a typical *sanguinea* nest and the *transkaucasica* workers appeared to be thriving outside their usual damp habitat. In S. Scandinavia the slave species is generally *F. fusca* but I found one example of a *F. cinerea/sanguinea* colony near Åhus in Sweden. Instances of this are not common but evidently as Donisthorpe (1927) pointed out, *F. sanguinea* will enslave any member of the *F. fusca* group that happen to be in the neighbourhood.

FORMICA URALENSIS Ruzsky.

F. uralensis was originally described from the S. Urals. There and in S. W. Siberia its habitat is dry steppe. It is also widely distributed in Eastern Europe and Scandinavia from the Kola peninsula to the Swiss Alps and westwards to Jutland. Records from the whole of this area describe its characteristic habitat as forest bog. The curious discrepancy between these biotopes is worth further study, particularly by entomologists having access to information and specimens from Asiatic Russia. The species has been taken in about half a dozen places in Finland where it is likely to be quite common over the many miles of bog in the centre and north. I found it plentifully at Rovaniemi. Most of the nests were in the bog among sparse trees with rather flat mounds built up of spruce needles. They were immediately distinguishable by eye from the abundant nests of *F. exsecta* in the same neighbourhood which were more domed and built up of mixed fragments of heather and general leaf litter. Workers of *F. uralensis* in one nest were extremely small, about 4-5 mm. long instead of 5-8 mm. Two nests were anomalous as they were built against the relatively dry railway bank. Forsslund (1949) gives an account of the habits and distribution of *F. uralensis* in Sweden and mentions the occasional occurrence of nests on dry ground but always in the near neighbourhood of swampy ground. I also saw a single isolated nest of this species among scattered firs in the bog at Pieksamaki.

FORMICA RUFA Group.

F. truncorum Fab. is a north and central European species of rather sporadic occurrence outside Scandinavia. In Norway and Sweden it is general and widely distributed from the Arctic north to the extreme south of Sweden. In Finland I only found it at Savonlinna in the south east, nesting typically in a tree stump. *F. cordieri* Bond., a species of more southern distributionis still only known in Scandinavia from Sweden where it is common in the south and from one locality in Denmark (col. Ch. Bisgaard). I saw no representatives of this ant in the Helsinki museum and the generally more common species *F. nigricans* Em. has apparently not often been taken there. These two species together are the '*pratensis*' of authors before Yarrow (1955) but were also confused with the more northern species *F. lugubris* Zett. Thus Hölldobler (1944) refers to *F. pratensis* at lat 66° in N. E. Karelia but this was undoubtedly *F. lugubris* and Forsslund's more critical records do not give *F. nigricans* further north than Central Sweden. I saw several nests at Savonlinna and also took *F. nigricans* at Boxholm in Småland, a new provincial record for Sweden. *F. lugubris* Zett. occurred at at Laurila and Rovaniemi and may be expected to abound throughout N. Finland. This species has a very wide range in Eurasia from the Pyrenees in the south and Ireland in the west to Kamschatka in E. Siberia. Typical examples of this species from Kamschatka collected by Dr. Malaise, labelled variously '*pratensis*' or *rufa* according to the amount of red on the worker thorax were seen in the Stockholm Natural History Museum. Although this is the only record for Siberia of which I am aware, there is little doubt that this ant must have a continuous distribution westwards throughout the northern coniferous forest to Scandinavia where it is so abundant. *F. acquilonia* Yarrow was unexpectedly common right in the south of Finland at Salo and Kouvola in spruce forest as well as in the centre and north from Pieksamaki to Rovaniemi. Hölldobler (1944) describes the nesting habits of this ant, under the name of *F. rufa rufo-pratensis*, in N. E. Karelia. In particular he refers to girdle nests, i.e. flattened domes with steep sides covered in vegetation. These are a typical feature of the landscape as one proceeds northward by train. In the Helsinki Museum most of the *rufa* group species are assembled together under such names as '*polyctena*' and '*major*' and a high proportion of these are *F. aquilonia* which is probably the commonest wood ant in Finland.

True *F. rufa* L. was only seen at Ruissalo and Turku in the south-west and at Savonlinna in the south-east. *F. polyctena* Foerst is the most hairless form of this group of species. Betrem (1960) includes Finland in its range and I have a single worker which was collected for me outside Helsinki which has the characteristics of this species. In 1958, I recorded *F. polyctena* from Hauerseter in Norway and Stockholm. I have now found it in Sweden also at Åhus in Skäne, Alvesta and Boxholm in Småland and Nykoping in Sodermannland. At Nykoping the colonies were quite typical as in the Netherlands (Elton, 1958) with smaller nests grouped round a central larger nest, but at

Alvesta only a single isolated mound was seen while in the other localities, the form of colony grouping was not distinguishable from that of nearby *F. rufa.*

REFERENCES.

Adlerz. 1914. *Formica fusca picea* Nyl., en torfmossarnas myra. *Arkiv. Zool.* 8, *Heft* **4** (26) : 1-5.

Brian, M. V., & Brian, A. D. 1949 Observations on the taxonomy of the ants *Myrmica rubra* L. and *M. laevinodis* Nylander (Hymenoptera, Formicidae). *Trans. R. ent. Soc. London,* **100** : 393-409.

Betrem, J. G. 1954. De satermier (*Formica exsecta* Nyl., 1846) en enkele van haar problemen, Hym., Formicidae. *Ent. Ber.,* **15** : 224-230.

———. 1960. Über der Systematik der Formica rufa-gruppe. *Tijdsch. Ent.,* **103** : 51-81.

Collingwood, C. A. 1959. Scandinavian Ants., *Ent. Rec.,* **71** : 77-81.

Donisthorpe, H. 1927. British Ants. 2nd Ed. London.

Elton, E. T. G. 1956 (1958). The Artificial Establishment of Wood Ant Colonies for Biological Control in the Netherlands. *Proc. Int. Congr. Ent.,* **4** : 573-578

Forsslund, K. H. 1947. Svenska Myror, 1-10. *Ent. Tidsk.,* **68** : 67-80.

———. 1949. Svenska Myror, 11-14. *Ent. Tidsk.,* **70** : 19-31.

———. 1957. Catalogus Insectorum Sueciae, XV. Hymenoptera : Formicidae. *Opusc. Entom.,* **22** : 70-78.

Holgersen, H. 1942. Ants of Northern Norway (Hym., Form.). *Tromsø Mus. Arshefter,* **24** : 1-33.

———. 1943. *Formica gagatoides* Ruzsky. *Tromsø Mus. Arshefter,* **64** : 1-15.

———. 1943. Ant studies in Rogaland (South-western Norway). *Avh. Norske Vidensk. Akad., I.* Oslo.

———. 1944. The Ants of Norway (Hymenoptera, Formicidae). *Nytt. Mag. Naturvidensk.,* **84** : 165-202.

Hölldobler, K. 1944. Uber die förstlich wichtigen Ameisen der nord ost Karelische Urwalden. *Z. Angew. Ent.,* **30** : 587-622.

Skwarra. 1929. Die Ameisenfauna des Zehlaubruches. *Schr. phys. ökon. Ges. Königsberg,* **66** : 1-174.

Wilson, E. O. 1955. A monographic revision of the ant genus Lasius. *Bull. Mus. Comp. Zool. Harvard,* **113** (1) : 1-199.

Yarrow, I. H. H. 1955. The British Ants allied to *Formica rufa* L. (Hym., Formicidae). *Trans. Soc. Brit. Ent.,* **12** : 1-48.

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